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Subject: Kalamazoo River Area 3 Oversight Report
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Jim,

Attached is the Area 3 oversight report for the July 15 through August 21 sampling effort. Deviations from the Field Sampling Plan generally involved collecting additional data or in once instance avoiding biological hazards (poison ivy).

If you have any questions, please contact me at the number listed below.

Thanks JK

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Kalamazoo River Area 3 Supplemental Sampling Oversight

PREPARED FOR: James Saric/USEP
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Jeff Keiser/CH2M HILL
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Dave Shekoski of CH2M HILL mobilized to Area 3 of the Kalamazoo River Superfund site on Monday, July 15, 2013, site to oversee supplemental bank and floodplain soil sampling by AMEC, contractor to Georgia-Pacific. All work except the Pine Impoundment was performed between Monday, July 15th and Friday, July 26th, excluding weekends. The Pine Impoundment sampling was completed in one day on August 21st. Sampling and GPS measurements were performed by AMEC personnel and oversight was performed by CH2M HILL (for USEPA) and CDM and ECT (for Michigan DEQ).

The work was performed in accordance with the June 13, 2013 Field Sampling Plan with the modifications and exceptions noted below.

Incremental Sampling (IS) of Residential Area Floodplain Soil Sampling

Incremental sampling was performed at nine yards at residences along the Kalamazoo River:

- 518 Water Street (DU-01)
- 506 Water Street (DU-02)
- 438 Water Street (DU-03)
- 370 Allegan Street (DU-04)
- 362 Water Street (DU-05)
- 354 Water Street (DU-06)
- 346 Water Street (DU-07)
- 334 Water Street (DU-08)
- 308 Water Street (DU-09)

Decision units (DUs) were established in residential back yards and sampled using the incremental sampling technique. Each back yard was divided into equally spaced sections. In each yard, a randomly selected starting point was determined in the first section and that relative location within the DU section was continued in the remaining sections in the yard. Each property had two DUs, one at a depth of 0-6 inches and one at 6-12 inches. The corners were established by GPS and marked with wooden stakes. Each yard was measured and divided into equally sized sections and marked with pin flags. Sampling was done using a small diameter hand corer driven to depth, with the soil composited into a single sample per depth unit (Photo 1). Two replicate samples were collected from DU-03 and DU-08, with replicate locations offset by ~3 feet from the initial sampling point locations. The replicates were labeled in such a way that they were blind to the lab (DU-03 replicates were labeled DU-10 and DU-11, and DU-08 replicates were labeled DU-13 and DU-14).

Deviations from the Plan

The original AMEC sampling plan¹ called for collection of 30 aliquots per DU, however AMEC made the decision to increase the number of residential incremental sample points from 30 to 48 to provide better coverage and

¹ Submitted by AMEC to USEPA on June 13, 2013

increase the level of precision. This approach was carried out throughout the residential area floodplain soil sampling.

The property at 362 Water Street (DU-05) contains a small section that runs the length of the property which is about 10 feet wide and heavily vegetated (Photo 2), while the rest of the property is mowed grass. AMEC decided to exclude this thin piece of land from the sampling area because:

- *The heavy trees and vegetation would make it extremely difficult to move around in*
- *It would be dangerous with fallen tree branches hidden by high vegetation and heavy growths of poison ivy*
- *This thin piece of land was not impacted any differently than the area that is being sampled therefore there would be no real benefit added by including it*
- *AMEC still collected 48 samples*
- *The width of the section not included is ~10 feet, which is smaller than intervals between the grid rows.*

Other Observations

Decontamination of equipment as observed by CH2M HILL consisted of an Alconox wash and distilled water rinse. The entire hand corer was cleaned with a scrub brush. The end section was unscrewed and the threads were scrubbed. Decontamination was performed on the DU where the samples were collected to prevent distributing contamination between DUs. When gray material was found it was assumed to be a visual indicator of elevated contamination, so decontamination was performed where the gray material was observed to prevent spreading contamination to cleaner areas.

At 346 Water Street (DU-07), a small garden with flowers is in back of the garage (~5 ft. x 18 ft.). One of the sample locations was in the garden (Photo 3), so the question was raised whether the soil was appropriate to include in the DU sample set since it could be non-native soil. It was decided that it should be included in the incremental sampling because there is visual evidence suggesting that the soil is the same as the surrounding soil, and there is no evidence that it is different. The soil is poor grade sandy soil, similar to native site soils.

At 334 Water Street (DU-08) one sample location was relocated because it fell in the middle of a very large (and high) patch of poison ivy. The location was along the river bank, which is soil that often contains gray material not found farther away from the bank. The two options were to move it 3 to 4 feet into the yard away from the bank, or move it 10 feet away but at the same distance from the bank. It was decided that another bank sample, even though 10 feet away, was probably more representative of the original location than a sample into the yard and farther away from the bank. All other locations remained the same as originally marked.

AMEC originally started collecting the composite sample in clean, new zip-seal bags, however they switched to new, clean plastic buckets to contain the soil during sample collection. (Samples were transferred from the buckets into zip-seal bags when sampling was complete.) Enough buckets were purchased for each remaining yard so each bucket was used only once, preventing the potential for cross contamination. The change was made to facilitate removal of the soil from the corer without spilling the soil or damaging the plastic bag (which could result in having to resample the entire yard).

Incremental Sampling for Ecological Risk Assessment

Incremental samples for ecological risk were collected parallel to the river across multiple properties. The study boundary includes soil between the river bank and the 683 foot NGVD elevation contour. The same systematic random sampling approach used for the residential floodplain soil sampling was also used for the ecological sampling.

GPS was used to establish the 683 foot elevation contour on the following properties:

- 370 Allegan Street (DU-04)
- 362 Water Street (DU-05)
- 354 Water Street (DU-06)
- 346 Water Street (DU-07)
- 334 Water Street (DU-08)

After the boundaries were established, the area was measured and divided into evenly spaced incremental sampling points and marked with pin flags. A small diameter hand corer was used to collect the samples. Two DUs were sampled: 0-6 inches and 6-12 inches.

Deviations from the Plan

The ecological sampling plan calls for collection of soil from 30 locations, however AMEC increased the number to 48 locations because sampling was performed over a very long (but narrow) area with the potential for increased variability. Also, this approach was consistent with the residential floodplain soil incremental sampling.

Other Observations

Ecological samples were collected from a 620 foot x20 foot area. Sample rows were at the bank, 10 feet from the bank, and 20 feet from the bank, with spacing of 41 feet.

Residential Area Bank Soil Sampling

Six unbiased samples were collected along the bank of the residential area and were analyzed for PCBs. The samples were located at:

- 506 Water Street (DU-02)
- 420 Water Street
- 370 Water Street (DU-04)
- 354 Water Street (DU-06)
- 334 Water Street (DU-08)
- 205 Water Street

Unbiased sample locations were determined by choosing the approximate mid-point of each property where accessibility allowed. If the mid-point was not accessible, the closest location to the mid-point was selected. In addition to the unbiased samples, three additional biased samples were collected based on visual evidence of potential contamination (i.e. gray material).

Samples were collected with 3-inch diameter Lexan cores driven to refusal with a slide hammer (~30 pounds).

After collection, bank samples were visually inspected, logged, and photographed, in accordance with the AMEX Sample Plan.

Deviations from the Plan

The original AMEC sampling plan called for sampling three intervals per location: gray material, the interval above the gray material and the interval below the gray material. AMEC modified the approach to include samples from depth intervals of 0-6 inch, 6-12 inch, 12-24 inch, and 24 inch to refusal, plus a sample of the gray material. This approach was chosen because it meets the criteria of the plan, but gives better depth resolution.

Floodplain Soil in the Former Mill Race Outlet

Floodplain soil samples from the former mill race outlet were collected from transects which were divided into three sections. The samples were collected into Lexan cores driven to refusal by a slide hammer. Samples were

processed in an alternate processing location and included logging a description of the material, photographing the cores, and transferring samples to containers. Sample locations were surveyed by GPS.

Deviations from the Plan

The original AMEC sampling plan called for collecting three samples from three transects in the former mill race outlet. After exploring where the three transects were supposed to be collected (near samples OFP-076 and OFP-077) AMEC decided to add an additional transect with three more samples in to better characterize the area.

Other Floodplain Soil Samples

Eight additional floodplain soil samples were collected to fill PCB data gaps. Samples were collected into Lexan cores driven to refusal by a slide hammer. Cores were described, logged, photographed and sampled. No deviations from the plan were noted.

Non-PCB Sampling

Non-PCB soil samples were collected into Lexan cores, driven to depth by a slide hammer or rubber mallet to the sample depth specified in Table 1 of the June 13th sample plan. Samples were collected to be analyzed for:

- VOCs
- SVOCs
- Pesticides
- Metals
- Mercury
- Dioxins/furans

For VOC samples, a disposable plunger was pre-weighed, filled with the appropriate amount of soil (5 g for vials with water, 10 g for vial with methanol), weighed again and inserted into the vials. Weighing was done with a portable pocket-size digital scale.

All non-VOC samples were collected into a 4-ounce amber glass jar and an 8-ounce clear glass jar provided by the laboratory.

Non-PCB samples that could not be accessed due to water conditions included KKPT90-7, ORT-11, KP14C-6, and OTBN-14. Sample OTBN-14 was replaced by OFP-025. Sample locations in the Pine Impoundment could not be accessed during the first mobilization due to the extremely soft conditions of the sediment floor, however a second mobilization on August 21, 2013 allowed this area to be sampled.

Pine Creek Impoundment Sampling

The same AMEC personnel were on site for the second mobilization. Sediment was still dangerously soft and very deep (based on poling). AMEC used three 2' x 8' plywood sections which were laid on the sediment surface allowing them to walk to the sampling locations (Photo 4). A small jon boat with the equipment inside was pulled along the surface on the east side of the impoundment, but was abandoned on the west side because of high vegetation. Due to the limited space on the plywood sections, CH2M HILL observed the sampling from the edge of the impoundment. Binoculars were used to enhance the observation of details of the sampling activities.

Before sampling was performed, the sampling points were located by GPS and staked/flagged. Samples were collected for non-PCB analyses using Lexan tubes driven to depth. Sample parameters included VOCs, SVOCs, pesticides, metals, mercury, dioxins and furans. Sample container configuration was the same as was used during the non-PCB sampling completed during the initial mobilization (three 40-ml VOA vials, two with 5 ml water and one with 10 ml methanol, one 4 ounce amber glass jar, and one 8 ounce clear glass jar). Analyses to be performed by Test America – Burlington, and were scheduled to be picked up from the AMEC office by lab courier.

The locations where impound samples were collected included:

- Three samples were collected from **FF-66** (0-2", 2-6", and 6-12")
- Five samples were collected from **OSD-06** (0-2", 2-6", 6-11", 11-15", and 15-24")
- Four samples were collected from **OSD-08** (0-2", 2-6", 6-10", and 10-12")
- Four samples were collected from **OSD-05** (0-6", 6-12", 12-15", and 15-24")

A field duplicate was collected from OSD-06 at the 15-24" interval.

Sample locations and depths for non-PCB analyses were selected based on a range of PCB concentrations and the need to fill the respective data gaps outlined in Table 1 of the AMEC Sample Plan.

All samples were stored on ice in a cooler, and custody procedures were followed.

Summary

Sampling was generally performed in accordance with the Field Sampling Plan. Deviations from the plan which are discussed in the above sections were performed with the intent of gathering additional information or in response to field conditions. All tasks were openly discussed with CH2M HILL and all concerns were adequately addressed prior to sampling.



Photo 1, Hand core



Photo 2, Area excluded at property 362 Water St.



Photo 3 Garden sampling



Photo 4, Pine Creek sampling